Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Seminar

Anomalous spin transport in near-integrable spin chain

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This talk explores anomalous high-temperature spin transport in near-integrable one-dimensional systems, using the XXZ model as a central example. I will discuss three cases: (i) spin superdiffusion at the isotropic point and its sensitivity to weak energy-conserving perturbations, where the fate of superdiffusion depends on perturbation symmetry; (ii) diffusion in the easy-axis regime, where integrability-breaking perturbations induce a sharp change in the diffusion constant, marking a transition to normal diffusion; and (iii) subdiffusion induced by a finite Stark potential, leading to fractonic transport in large systems and challenging the notion of Stark many-body localisation. Overall, the talk will provide insights into the robustness, emergence, and crossover of anomalous transport phenomena in quantum spin chains.

Wednesday, Sep 3rd 2025

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Seminar Hall, TIFRH